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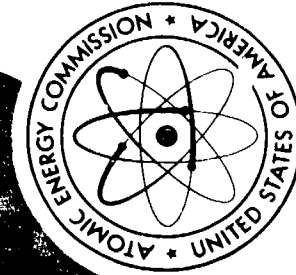
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BUREAU OF SHIPS GROUP
TECHNICAL INSPECTION REPORT

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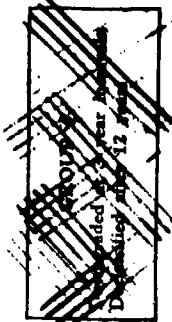
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APPROVED:

F.X. Forest,
Captain, U.S.N.

ATC 14838 WUG/CRB (DD389)

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TECHNICAL INSPECTION REPORT

OVERALL SUMMARY

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

HULL

There was no flooding as a direct result of Test B. The engine room flooded to about 3-1/2 feet above the lower level floor plates, - the port and starboard shaft alleys flooded to above the shaft level. The flooding resulted from excessive leakage through the stern tube glands, a condition known to have existed prior to Test B. The diesel generator room was partially flooded by water backing up through the exhaust line, which terminates at a point a short distance above the waterline. The radio room was flooded to a few inches of depth by wash water entering during decontamination. All of the flooding could have been controlled if the crew had been aboard.

MACHINERY

The engine room was flooded to a depth of about 4 feet above the lower level floor plates. Water entered through stern tube glands, which leaked badly before the test.

ELECTRICAL

Drafts and list were not observed.

The engine room was flooded to about four feet above the lower floorplates.

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(b) Structural damage.

HULL

No structural damage occurred in this ship.

MACHINERY

No comment.

ELECTRICAL

Not observed.

(c) Other damage.

HULL

Not observed.

MACHINERY

None except that incident to flooding.

ELECTRICAL

Moderate damage due to flooding is the only damage found in electrical equipment.

II. Forces Evidenced and Effects Noted.

(a) Heat.

HULL

No effects noted.

MACHINERY

No evidence.

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ELECTRICAL

There was no evidence of heat on the ship.

(b) Fires and explosions.

HULL

None.

MACHINERY

No evidence.

ELECTRICAL

There were no fires and no explosions.

(c) Shock.

HULL

No effects noted.

MACHINERY

No evidence.

ELECTRICAL

There was no evidence of shock found in any electrical equipment.

(d) Pressure.

HULL

None.

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MACHINERY

No evidence, except for pressure incident to wave action. The wave action partially flooded the diesel generator room, and increased the leakage of the stern tube glands.

ELECTRICAL

There was no evidence of pressure found in any electrical equipment.

(e) Effects peculiar to the atom bomb.

HULL

None, other than radioactivity.

MACHINERY

None.

ELECTRICAL

There were no effects peculiar to the atom bomb except high radioactivity, which did not affect electrical equipment.

III. Results of Test on Target.

(a) Effect on machinery, electrical, and ship control.

HULL

Not observed.

MACHINERY

None except that incident to flooding, which could have been controlled if the crew had been aboard.

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ELECTRICAL

There would be no effect on propulsion and ship control caused by failure of electric equipment, although flooding would have taken out some electrical engine room auxiliaries.

(b) Effect on gunnery and fire control.

HULL

Not observed.

MACHINERY

No comment.

ELECTRICAL

Damage to electrical equipment would have had no effect on gunnery and fire control.

(c) Effect on watertight integrity and stability.

HULL

None.

MACHINERY

No comment.

ELECTRICAL

Electrical damage had no effect on watertight integrity and stability.

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(d) Effect on personnel and habitability.

HULL

None, other than that of radioactivity.

MACHINERY

None except radioactivity, which was high 15 days after

Test B.

ELECTRICAL

Electrical failures would have had no direct effect on personnel.

The flooding of the galley transformer bank would have affected habitability through loss of food preparation capacity.

(e) Effect on fighting efficiency.

HULL

None.

MACHINERY

None except possible effects of radioactivity.

ELECTRICAL

Damage to electrical equipment would have had no effect on fighting efficiency.

IV. Summary of Observers' Impressions and Conclusions.

HULL

The test had no effect on structural strength, watertight integrity, or fighting efficiency of the ship. Flooding could have easily been controlled if the crew had been aboard during the Test.

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MACHINERY

The MUGFORD was outside the range of mechanical damage during Test B, but was within the range of action of the water wave and radioactivity.

ELECTRICAL

The only electrical damage was caused by flooding. This would not have occurred if the crew had been aboard.

V. Preliminary Recommendations.

HULL

None.

MACHINERY

The exhaust from the diesel generator should be as high above the waterline as practicable.

ELECTRICAL

As the only damage would not have occurred under service conditions, no recommendations are made.

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TECHNICAL INSPECTION REPORT

SECTION I - HULL

GENERAL SUMMARY OF HULL DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

There was no flooding as a direct result of Test B. The engine room flooded to about 3 1/2 feet above the lower level floor plates. The port and starboard shaft alleys flooded to above the shaft level. The flooding resulted from excessive leakage through the stern tube glands, a condition known to have existed prior to Test B.

(b) Structural damage.

No structural damage occurred in this ship.

(c) Other damage.

Not observed.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No effects noted.

(b) Fires and explosions.

None.

(c) Shock.

No effects noted.

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(d) Pressure.

None.

(e) Effects peculiar to the Atomic Bomb.

None, other than radioactivity.

III. Results of Test on Target.

(a) Effect on machinery, electrical, and ship control.

Not observed.

(b) Effect on gunnery and fire control.

Not observed.

(c) Effect on watertight integrity and stability.

None.

(d) Effect on personnel and habitability.

None, other than that of radioactivity.

(e) Effect on fighting efficiency.

None.

IV. Summary of Observers' Impressions and Conclusions.

The test had no effect on structural strength, watertight integrity, or fighting efficiency of the ship. Flooding could have easily been controlled if the crew had been aboard during the Test.

V. Preliminary Recommendations.

None.

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VI. Instructions for loading the vessel specified the following:

ITEM	LOADING
Fuel oil	Minimum
Diesel oil	Minimum
Ammunition	10%
Potable and reserve feed water	95%
Salt water ballast	350 tons

Details of the actual quantities of the various items aboard are included in Report 7, Stability Inspection Report, submitted by the ship's force in accordance with "Instructions to Target Vessels for Tests and Observations by Ship's Force" issued by the Director of Ships Material. This report is available for inspection in the Bureau of Ships Crossroads Files.

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DETAILED DESCRIPTION OF HULL DAMAGE

A. General Description of Hull Damage.

No hull damage.

B. Superstructure.

No damage.

C. Guns and Directors.

No damage.

D. Torpedo Mounts, Depth Charge Gear.

No damage.

E. Weather Deck.

No damage. No movement was recorded by any of the six deflection scratch gages installed under the weather deck.

F. Exterior Hull.

No damage.

G. Interior Compartments (above waterline).

No damage.

H. Armor Decks and Miscellaneous Armor.

Not applicable.

I. Interior Compartments (below waterline).

No damage.

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J. Underwater Hull.

No damage.

K. Tanks.

No damage.

L. Flooding.

About two weeks after the test, the engine room was found to be flooded to about 3-1/2 feet above the lower level floor plates. The port and starboard shaft alleys were flooded above the level of the shafts. The flooding occurred through leaking stern tube shaft glands, a condition known to have existed prior to Test B. This flooding was slow and could easily have been controlled if the crew had been aboard during the Test.

The flooding of the engine room caused the grounding of the electric motors driving the cruising condensate pumps, fire and flushing pumps, drain booster pumps, dynamo condensate circulating pump, and caused grounding of the galley transformer bank.

M. Ventilation.

No damage.

N. Ship Control.

No damage.

O. Fire Control.

No damage.

P. Ammunition Behavior.

No damage.

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Q. Ammunition Handling.

No damage.

R. Strength.

No damage.

S. Miscellaneous.

No comment.

TECHNICAL INSPECTION REPORT

SECTION II - MACHINERY

GENERAL SUMMARY OF MACHINERY DAMAGE

I. Target Condition After Test.

(a) Drafts after test; list; general areas of flooding, sources.

The engine room was flooded to a depth of about 4 feet above the lower level floor plates. Water entered through stern tube glands, which leaked badly before the test. The diesel generator room was partially flooded by water backing up through the exhaust line, which terminates at a point a short distance above the water line. All of the flooding could have been controlled if the crew had been aboard.

(b) Structural damage.

No comment.

(c) Other damage.

None except that incident to flooding.

II. Forces Evidenced and Effects Noted.

(a) Heat.

No evidence.

(b) Fires and explosions.

No evidence.

(c) Shock.

No evidence.

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(d) Pressure.

No evidence, except for pressure incident to wave action. The wave action partially flooded the diesel generator room, and increased the leakage of the stern tube glands.

(e) Effects apparently peculiar to the atom bomb.

None.

III. Effects of Damage.

(a) Effect on machinery and ship control.

None except that incident to flooding, which could have been controlled if the crew had been aboard.

(b) Effect on gunnery and fire control.

No comment.

(c) Effect on water-tight integrity and stability.

No comment.

(d) Effect on personnel and habitability.

None except radio activity, which was high 15 days after Test B.

(e) Total effect on fighting efficiency.

None except possible effects of radioactivity.

IV. General Summary.

The MUGFORD was outside the range of mechanical damage during Test B, but was within the range of action of the water wave and radioactivity.

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V. Preliminary Recommendation.

The exhaust from the diesel generator should be as high above the waterline as practicable.

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DETAILED DESCRIPTION OF MACHINERY DAMAGE

A. General Description of Machinery Damage.

(a) Overall Condition.

The engine room was flooded to about 4 feet above the lower level floor plates by water leaking around the stern tube glands. These leaked excessively before Test A. The flooding could have been controlled if the crew had been aboard. The following pump motors were grounded out by the flooding; #2 fire and flushing; drain booster; dynamo condensate; dynamo circulating. The engine room was inoperable because of the flooding. This flooding would probably have occurred during the absence of the crew without the explosion. It is not considered attributable to Test B, although the test may have increased the leakage. The emergency diesel generator was inoperable as a result of partial flooding, the water backing up through the overboard exhaust connection. This flooding is attributable to Test B.

(b) Areas of major damage.

There was no major damage from Test B.

(c) Primary Causes of damage.

Secondary damage was incurred by flooding of the engine room and the diesel generator room. The primary cause of the flooding of the diesel generator room was wave action. The primary cause of flooding of the engine room was the leaky condition of the stern tube glands before the test. Leakage was probably accentuated by wave action.

(d) Effect of Target Test on Overall Operation of Machinery Plant.

Actually, the main engines and the emergency diesel generator are inoperable because of flooding. If the crew had been

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aboard, the flooding could have been prevented and the test would have had no effect on the overall operation of the machinery plant.

B. Boilers.

Undamaged. No. 3 boiler was steamed for about 8 hours per day on 6 days after Test B. Operation was normal. No. 1 boiler was tested hydrostatically after Test B and found tight. The other boilers were inspected visually and show no apparent damage.

Hydrostatic Test Data of Boiler #1

	Before Test B	After Test B
Initial Pressure	460 lb/sq. in.	460 lb/sq. in.

Time required for pressure to drop

200 lb/sq. in.	2 1/2 hours	2 1/2 hours
----------------	-------------	-------------

Pressure remaining after

24 hours	70 lb/sq. in.	80 lb/sq. in.
----------	---------------	---------------

C. Blowers, Forced Draft.

Apparently undamaged. Motor driven forced draft blower #2 (port use) and steam driven blower #2 were operated satisfactorily after Test B. The other forced draft blowers were inspected visually and no evidence of damage is apparent.

D. Fuel Oil Equipment.

1. Apparently undamaged.

2. Visual inspection showed no evidence of any damage to the fuel oil heaters, piping, or valves, etc. Equipment in the after fire-room has been in use during steaming of #3 boiler after Test B.

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E. Boiler Feedwater Equipment.

1. Apparently undamaged.
2. Part of the system was operated under service conditions with #3 boiler steaming. The remainder of the equipment was inspected visually.

F. Main Engines.

1. Apparently undamaged.
2. Visual inspection showed no evidence of any damage.
3. An alignment check (by branning) indicated that the main engines are still properly aligned after Test B.

G. Reduction Gears.

No apparent damage from visual inspection.

H. Shafting & Bearings.

1. No damage apparent from visual inspection.
2. The shaft alleys, both port and starboard, were flooded and the shafts were submerged. The water entered through the stern tube glands, which leaked excessively before Test B. The flooding could have been prevented if the crew had been aboard during the test.

I. Lubrication System.

No damage apparent from visual inspection.

J. Condensers and Air Ejectors.

No damage apparent from visual inspection.

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K. Pumps.

The engine room was flooded to about 4 feet above the lower level floor plates, which grounded out the motors of several pumps. This flooding could have been prevented if the crew had been aboard. Otherwise, there was no apparent damage to pumps.

L. Auxiliary Generators (Turbine & Gears).

No damage apparent from visual inspection.

M. Propellers.

No damage apparent from visual inspection from the surface of the water.

N. Distilling Plant

No damage apparent from visual inspection.

O. Refrigerating Plant.

No damage apparent from visual inspection.

P. Winches, Windlasses, & Capstans.

No damage apparent from visual inspection.

Q. Steering Engine.

No damage apparent from visual inspection.

R. Elevators, Ammunition Hoists, etc.

No damage apparent from visual inspection.

S. Ventilation (Machinery).

No damage apparent from visual inspection.

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T. Air Compressors.

No damage apparent from visual inspection.

U. Diesels (Generators & Boilers).

Water backed up through the exhaust discharge pipe, near the outside waterline, and flooded the diesel generator space to a depth of about 2 feet. This filled the crankcase with salt water and grounded out the starting motor. Otherwise, the generator and its engine were undamaged. They were placed in operation after Test B, and functioned normally.

V. Piping.

No damage was apparent from visual inspection. Some of the piping has been used in service since Test B.

W. Miscellaneous.

No damage apparent from visual inspection.

TECHNICAL INSPECTION REPORT

SECTION III - ELECTRICAL

GENERAL SUMMARY OF ELECTRICAL DAMAGE

I. Target Condition after Test.

(a) Drafts; list; general areas of flooding, sources.

Drafts and list were not observed. The engine room was flooded to about four feet above the lower floorplates.

The radio room was flooded to a few inches of depth by wash water entering during decontamination.

(b) Structural damage.

Not observed.

(c) Damage.

Moderate damage due to flooding is the only damage found in electrical equipment.

II. Forces Evidenced and Effects Noted.

(a) Heat.

There was no evidence of heat on the ship.

(b) Fires and explosions.

There were no fires and no explosions.

(c) Shock.

There was no evidence of shock found in any electrical equipment.

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D. (d) Pressure.

There was no evidence of pressure found in any electrical equipment.

(e) Any effects peculiar to the Atomic Bomb.

There were no effects peculiar to the atomic bomb except high radioactivity, which did not affect electrical equipment.

III. Results of Test on Target.

(a) Effect on propulsion and ship control.

There would be no effect on propulsion and ship control caused by failure of electric equipment, although flooding would have taken out some electrical engine room auxiliaries.

(b) Effect on gunnery and fire control.

Damage to electrical equipment would have had no effect on gunnery and fire control.

(c) Effect on water-tight integrity and stability.

Electrical damage had no effect on water-tight integrity and stability.

(d) Effect on personnel and habitability.

Electrical failures would have had no direct effect on personnel.

The flooding of the galley transformer bank would have affected habitability through loss of food preparation capacity.

(e) Total effect on fighting efficiency.

Damage to electrical equipment would have had no effect on fighting efficiency.

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IV. General Summary of Impressions and Conclusions.

The only electrical damage was caused by flooding. This would not have occurred if the crew had been aboard.

V. Preliminary General or Specific Recommendations.

As the only damage would not have occurred under service conditions, no recommendations are made.

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SECTION III

PART C - INSPECTION REPORT

SECTION C - ELECTRICAL

A. General Description of Electrical Damage.

(a) Overall Condition.

The condition of the electrical plant was unchanged except for the flooding out of certain engine room auxiliaries.

(b) Areas of major damage.

The lower level of the engine room and the radio room are the only areas of damage.

(c) Primary causes of damage in each area of major damage.

Flooding is the only cause of damage.

(d) Operability of electric plant.

1. Ship's service generator plant - not affected
2. Electric and boiler auxiliaries - auxiliaries flooded out are:
Cruising condensate pump #1.
Cruising condensate pump #2.
Flushing pump #2.
Dynamo condensate pump.
Dynamo circulating pump.
3. Electric propulsion - does not apply.

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4. Communications - the radio room was heavily sprayed with flushing water and the deck flooded.
5. Fire control circuits - not affected.
6. Ventilation - not affected.
7. Lighting - not affected except locally as a result of flooding.

(e) Types of equipment most affected.

1. Switchboard and switchgear - not affected.
2. Rotating machinery - flooded out in lower level of engine room.
3. Motor controllers - flooded out in lower level of engine room.
4. Cables and supports - not affected except by flooding locally.
5. Other equipment - galley range transformers were flooded out in the engine room.

B. Electric Propulsion Rotating Equipment (S41).

This item does not apply to vessel.

C. Electric Propulsion Control Equipment (S41).

This item does not apply to the vessel.

D. Ship's Service Generators (S61).

The machines showed no damage.

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E. Emergency Generators (S61).

No damage was found in the emergency generator. The fathometer recording 14 minutes after the test indicated that the machine was running during the test.

F. Switchboards and Distribution Panels (S62).

No damage was found in any switchboard or panel.

G. Wiring, Wiring Equipment and Wireways. (S63).

There was no damage to wire and equipment except where immersed by flooding.

H. Transformers (S62).

The galley transformers in the engine room were flooded. No other transformers were damaged.

I. Submarine Propelling Batteries (S62).

This item does not apply to the vessel.

J. Portable Batteries (S62).

No portable batteries were damaged in any way.

K. Motors, Motor-Generator Sets and Motor Controllers (S63).

The only damage to any motors, motor generators or motor controllers was the flooding of the motors and controllers for the following engine room auxiliaries: Cruising condensate pumps Nos. 1 and 2; No. 2 flushing pump, dynamo condensate pump and dynamo circulating pump.

L. Lighting Equipment (S64);

No lighting equipment except a few flooded local

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circuits was affected. No lamps were broken.

M. Searchlights (S66).

There was no damage to searchlights.

N. Degaussing Equipment (S81).

There was no damage to degaussing equipment.

O. Gyro Compass Equipment (S24).

No damage was found in any gyro compass equipment.

P. Sound Powered Telephones (S65).

No damage was found in any sound powered telephone.

Q. Ship's Service Telephones (S65).

Sound powered telephones are the only telephones on the ship.

R. Announcing Systems (S65).

No damage to announcing systems was found.

S. Telegraphs (S65).

No damage to telegraphs was found.

T. Indicating Systems (S65).

No damage to indicating systems was found

U. I.C. and A.C.O. Switchboards (S65).

No damage to I.C. and A.C.O. switchboards was found.

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V. F.C. Switchboards (S71).

No damage to F.C. switchboards was found.

W. Special BuShips Material.

No damage was found in any BuShips code 660 material except the flooding of those items mounted in the lower level of the engine room.

SECTION IV

PHOTOGRAPHS

TEST BAKER

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AB-CR-227-283-66. View from off port bow after Test B.

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AB-CR-227-283-70. View from off starboard quarter after Test B.

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APPENDIX

COMMANDING OFFICERS REPORT

TEST BAKER

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REPORT #5

COMMANDING OFFICERS REPORT

SECTION I

This vessel received no damage from the explosion of the second bomb.

The engine room flooded to a depth of three feet through the starboard shaft alley. This shaft alley flooded through the stern tube due to badly worn packing. The following engine room machinery was put out of commission because of zero ground due to flooding:

1. Galley transformer bank.
2. No. 2 Flushing pump motor.
3. No. 1 Cruising condensate motor.
4. No. 2 Cruising condensate motor.
5. Dynamo condensate pump motor.
6. Dynamo circulating pump motor.

The flooding was slow and would have been easily controlled had anyone been on board.

The emergency diesel generator motor which was running during the test re-engaged its starter while running and burned out the starter.

There was no other damage sustained by the MUGFORD.

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Defense Special Weapons Agency
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18 April 1997

MEMORANDUM FOR DEFENSE TECHNICAL INFORMATION CENTER
ATTENTION: OMI/Mr. William Bush (Security)

SUBJECT: Declassification of Reports

The Defense Special Weapons Agency has declassified the following reports:

/✓AD-366588	XRD-203-Section 12✓
AD-366589	XRD-200-Section 9
AD-366590	XRD-204-Section 13
AD-366591	XRD-183
/✓AD-366586	XRD-201-Section 10✓
/✓AD-367487	XRD-131-Volume 2✓
/✓AD-367516	XRD-143✓
/✓AD-367493	XRD-142✓
AD-801410L	XRD-138✓
AD-376831L	XRD-83✓
AD-366759	XRD-80
/✓AD-376830L	XRD-79✓
/✓AD-376828L	XRD-76✓
/✓AD-367464	XRD-106✓
AD-801404L	XRD-105-Volume 1✓
/✓AD-367459	XRD-100✓

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AD-376836L ✓	XRD-98 ✓
AD-376835L ✓	XRD-97 ✓
AD-376834L ✓	XRD-96 ✓
AD-376833L ✓	XRD-95 ✓
✓ AD-376832L ✓	XRD-94 <i>re-ingest</i>
✓✓ AD-367458 x	XRD-93 ✓
AD-367457 ✓	XRD-92-Volume 2
AD-367456 ✓	XRD-91-Volume 1
AD-367455 ✓	XRD-90
AD-367454 ✓	XRD-89
AD-367453 ✓	XRD-88
AD-367452 ✓	XRD-87
AD-366764 ✓	XRD-86
AD-376837L ✓	XRD-99
AD-366758 ✓	XRD-78
AD-366734 ✓	XRD-44
AD-366763 ✓	XRD-85
AD-376829L ✓	XRD-77 ✓
✓✓ AD-367462 x	XRD-103 ✓
✓✓ AD-367463 x	XRD-104 ✓
✓✓ AD-367461 x	XRD-102 ✓
AD-367460 ✓	XRD-101

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AD-801406L ✓ XRD-114✓

In addition, all of the cited reports are now **approved for public release; distribution statement "A" now applies.**

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